

Amendments to the Claims

The following list of claims replaces all previous versions of claims. Applicants have amended the claims to more clearly describe the claimed invention. The voluntary nature of the amendments does not create a prosecution history estoppel.

1. (Currently Amended) A via contact structure having a via contact to a diffusion region at a top surface of a substrate including a single-crystal semiconductor region, the via contact structure comprising:

a first layer consisting essentially of a silicide of a first metal in contact with said diffusion region at said top surface;

a dielectric region overlying said first layer, said dielectric region having an outer surface and an opening extending from said outer surface through said first layer to said top surface of said substrate;

a second layer lining said opening and contacting said top surface in said opening, said second layer including a second metal lining a sidewall of said opening and a silicide of said second metal self-aligned to said top surface in said opening;

a diffusion barrier layer overlying said second layer within said opening; and

a third layer including a third metal overlying said diffusion barrier layer and filling said opening.

2. (Currently Amended) The via contact structure as claimed in claim 1, wherein said first metal is selected from the group consisting of cobalt (Co), molybdenum (Mo), niobium (Nb), nickel (Ni), palladium (Pd), platinum (Pt), tantalum (Ta), titanium (Ti), vanadium (V) and tungsten (W).

3. (Currently Amended) The via contact structure as claimed in claim 2, wherein said second metal is selected from the group consisting of titanium (Ti), nickel (Ni), platinum (Pt), cobalt (Co), tantalum (Ta), and tungsten (W).
4. (Currently Amended) The via contact structure as claimed in claim 3, wherein said first metal and said second metal are the same.
5. (Currently Amended) The via contact structure as claimed in claim 3, wherein said first metal consists essentially of cobalt and said second metal consists essentially of titanium.
6. (Currently Amended) The via contact structure as claimed in claim 5₁, wherein said diffusion barrier layer includes a metal nitride.
7. (Currently Amended) The via contact structure as claimed in claim 6, wherein said metal nitride includes titanium nitride (TiN).
8. (Currently Amended) The via contact structure as claimed in claim 7₁, wherein said third metal includes tungsten (W).
9. (Currently Amended) The via contact structure as claimed in claim 8₁, wherein said opening has a width of about 250 nm or less and a height-to-width aspect ratio greater than one.
10. (Currently Amended) The via contact structure as claimed in claim 9, wherein said aspect ratio value is about two.